



RECEIVED

JUL 14 2015

**LEGISLATIVE ENVIRONMENTAL
POLICY OFFICE**

July 13, 2015

Gallatin County Commissioners, 311 W Main, Rm 306, Bozeman, MT 59715
Gallatin Solid Waste District, PO Box 461, Three Forks, MT 59752
Tim Roark, Gallatin County Environmental Health, 215 W Mendenhall, Bozeman, MT 59715
Matt Kelley, Gallatin County Health Officer, 215 W Mendenhall, Bozeman, MT 59715
Clifford and Laura Schutter, 3845 Kuipers Rd, Manhattan, MT 59741
Department of Natural Resources, Trust Land Management Division, 1025 11th Ave, Helena MT 59601
Director, Department of Fish, Wildlife & Parks, via email
Lisa Peterson, DEQ, Director's Office, via email
Environmental Quality Council, State Capitol Building, Rm 171, Helena, MT 59620
Documents Section, State Library, Capitol Complex, Helena, MT 59620

Ladies and Gentlemen:

To comply with the Administrative Rules of Montana (ARM), specifically ARM 17.4.607(2), 608, 609 and 610, the Department of Environmental Quality (DEQ) has prepared the enclosed Draft Environmental Assessment (EA). This Draft EA addresses the proposed expansion of the Gallatin County Logan Class II landfill. The applicant proposes to expand the currently active 80-acre Logan Landfill into an adjacent 27.1-acre tract to the north and an adjacent 19.7-acre tract to the west. Landfilling activities will not occur on either parcel. Instead, the northern 27.1-acre tract of land will be used for groundwater monitoring activities as necessary, and the western 19.7-acre tract of land will only be used for composting activities that are presently conducted within the currently licensed active landfill.

The purpose of this Draft EA is to inform all interested governmental agencies, public groups, and individuals of the proposed action and to present DEQ's findings on the proposal. Persons wishing to comment have until the close of business on August 12, 2015, to submit written comments concerning the proposal. DEQ will not make a licensing decision until after the comment period has ended. A complete color copy of the EA may be viewed on DEQ's website at: <http://deq.mt.gov/ea/WasteMgt.mcp.x>.

If you wish to comment on this proposed action within the 30-day public comment period, please do so in writing by mailing your comments to the Waste and Underground Tank Management Bureau, Solid Waste Program, P.O. Box 200901, Helena, MT 59620-0901 or by E-mail to mailbox deqwutbcomments@mt.gov.

Sincerely,

Mary Louise Hendrickson, Environmental Science Specialist
Solid Waste Program - Project Lead
Phone: 406-444-1808; Fax: 406-444-1374
Email: mhendrickson@mt.gov

Enclosure: Gallatin County Logan Class II Landfill proposed expansion Draft EA

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

Permitting and Compliance Division
Waste and Underground Tank Management Bureau
Solid Waste Section
PO Box 200901
Helena, MT 59620-0901

DRAFT ENVIRONMENTAL ASSESSMENT

SOLID WASTE SECTION ROLES AND RESPONSIBILITIES:

The Department of Environmental Quality (DEQ) is responsible for ensuring activities proposed under the Solid Waste Management Act, the Integrated Waste Management Act, the Septage Disposal Licensure Act, and the Motor Vehicle Disposal & Recycling Act are in compliance with current regulations. The Solid Waste Section (SWS) is a part of DEQ's Permitting and Compliance Division, Waste and Underground Tank Management Bureau. The Solid Waste Management Act (75-10-201, MCA) and the Administrative Rules of Montana (ARM), Title 17, Chapter 50 provide the necessary authority for the SWS to license and regulate solid waste management systems (SWMS) in the state of Montana.

SECTION 1.0 – PROJECT DESCRIPTION:

The Gallatin Solid Waste Management District (District) submitted a SWMS application for expansion of the currently licensed and active Logan Class II Landfill facility. The applicant proposes to expand the currently active 80-acre Logan Landfill into an adjacent parcel to the north and an adjacent parcel to the west. Landfilling activities will not occur on either parcel. Instead, the northern 27.1-acre tract of land will be used for groundwater monitoring activities as necessary, and the western 19.7-acre tract of land will only be used for composting activities that are presently conducted within the currently licensed active landfill.

Purpose of the Environmental Assessment:

In accordance with 75-1-102, MCA, the Montana Environmental Policy Act (MEPA) is procedural and requires the “adequate review of state actions in order to ensure that environmental attributes are fully considered by the legislature in enacting laws to fulfill constitutional obligations; and the public is informed of the anticipated impacts in Montana of potential state actions.” According to MEPA, environmental assessments (EAs) are the procedural documents that communicate the process agencies follow in their decision-making. An EA does not result in a certain decision, but rather serves to identify the potential effect of a state action within the confines of existing laws and rules governing such proposed activities so that agencies make balanced decisions. The MEPA process does not provide regulatory authority beyond the authority explicitly provided in existing statute under which the proposed facility expansion is being reviewed for licensure.

The Solid Waste Management Act and associated administrative rules establish the minimum requirements for the design and operation of SWMS's. The EA is the mechanism that DEQ uses to:

- 1) Disclose whether a proposed site meets the minimum requirements for compliance with the current laws and rules;
- 2) Assist the public in understanding the state SWMS regulations as they pertain to licensing solid waste facilities;
- 3) Identify and discuss the potential environmental effects of the proposed site if it is approved and becomes operational;
- 4) Discuss actions taken by the

applicant and the enforceable measures and conditions designed to mitigate the effects identified by DEQ during the review of the application; and 5) Seek public input to ensure DEQ has identified the substantive environmental impacts associated with the proposed landfill.

Benefits and Purpose of the Proposal

The main objective of the proposal is to relocate the composting activities that are conducted inside the current landfill boundary to a safer location outside the active disposal area. The District proposes to transfer the current composting operations to the adjacent western parcel. The District also performs regular groundwater monitoring activities to monitor the quality of the groundwater beneath the facility and is proposing to incorporate the adjacent northern parcel into the license boundary and use the parcel for groundwater monitoring activities.

At the present time, the District's Logan Class II Landfill facility conducts composting operations within the current licensed boundary. Expansion of the proposed facility boundary to the west will provide a permanent space for the composting operations that are presently conducted near the working face of the active disposal unit. This relocation will keep the commercial and private vehicles that are hauling materials for composting out of the active disposal area away from landfilling activities. The movement of the composting activities from the current location to the western parcel also allows for the segregation of compostable materials as they are received, minimizes the exposure site users will have to the more unpleasant materials that are composted, and provides additional storage space for the final compost produced. The landfill will continue to use the materials being produced in area to create a quality soil amendment that will be used onsite for landfill cell closures and general grounds maintenance.

There is currently no planned future development of the northern parcel for waste management activities. If at some point in the future, the District decides to develop the northern parcel for waste management activities, the District will have to first make a new application to DEQ and will then be subject to the current regulations for site characterization and all other aspects of landfill design and operation. Therefore, this Draft EA addresses only the incorporation of the northern parcel for groundwater monitoring activities.

Site Location

The District's current Logan Class II Landfill facility is located approximately 1.5 miles southeast of Logan, Montana, on property owned by Gallatin County. The proposed expansion site consists of a 27.1-acre parcel to the north and a 19.7-acre parcel to the west of the current facility; both contiguous to the active landfill. The parcel to the north abuts the facility's northern property boundary and is located in the W $\frac{1}{2}$ of the SW $\frac{1}{4}$, and the W $\frac{1}{2}$ of the SW $\frac{1}{4}$ of the SW $\frac{1}{4}$ of Section 31, Township 2 North, Range 3 East; the western parcel abuts the facility's western boundary and is located in the W $\frac{1}{2}$ of the NW $\frac{1}{4}$ of the NW $\frac{1}{4}$ of Section 1, Township 1 North, Range 2 East, Montana Principal Meridian, Gallatin County, Montana (Figure 1.1). Of the total 46.8 acres proposed for the expansion of the solid waste management facility, as stated above, only the western 19.7-acre parcel will be used for activities associated with the composting operations (Figure 1.2). The northern 27.1-acre parcel will be reserved for groundwater and vadose zone remediation activities. Neither parcel will be used for landfilling.

Figure 1.1: Location of Proposed Logan Landfill Expansion Areas (outlined in red)

Source: USDA-NRCS, Web Soil Survey, Gallatin County, Montana

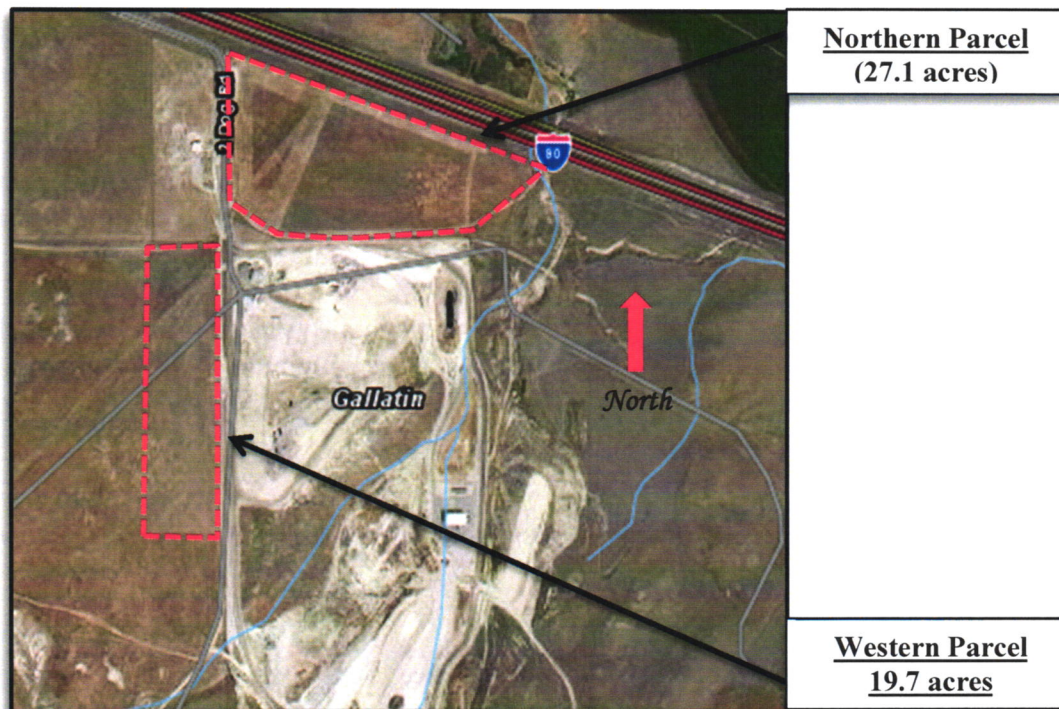
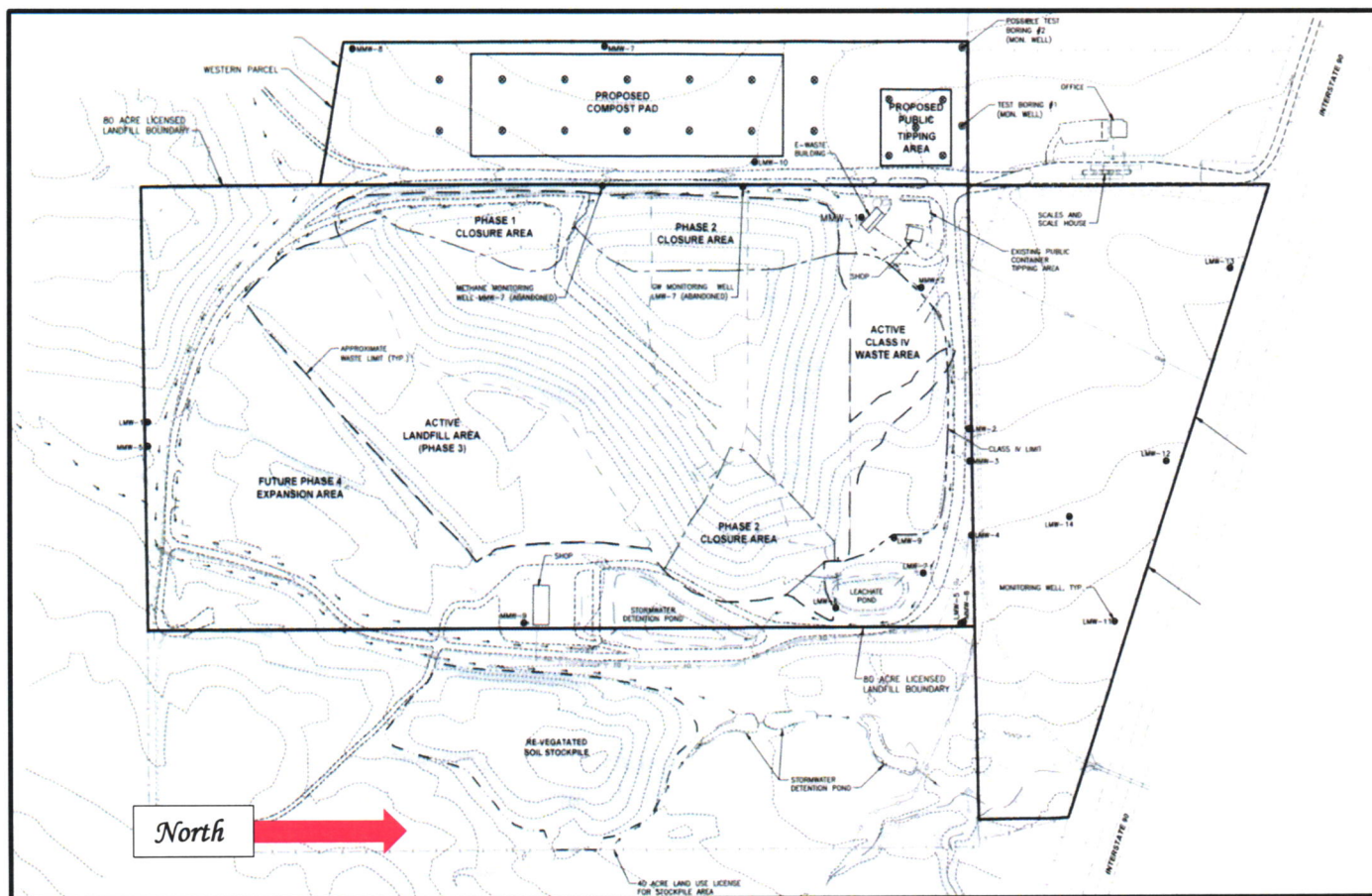


Figure 1.2: Proposed Landfill Expansion Site Plan

Source: Great West Engineering



Site Geography – Topography, Vegetation, and Climate

The proposed expansion areas border the northern and western boundaries of the current Logan Class II Landfill. The northern parcel is mostly flat with a slight draw on the western end. The property slopes to the northeast near Interstate-90. The western parcel has a slight slope to the east. The highest point lies near the center of the western property boundary.

The native vegetation is a mixture of prairie grassland and montane forest species. The common natural grasses consist of fescue, wheatgrass, junegrass, and needle and thread. Native trees and shrubs that occupy the area include limber and ponderosa pine, Douglas-fir, sagewort, sagebrush, and sumac.

The climate is generally cool and dry. Prevailing winds for the area are typically from the south-southeast direction. The average annual precipitation is 11.56 inches, with most of the precipitation occurring during May and June. The average annual snowfall is 38.9 inches. The average high temperature is 56.3°F and the average low temperature is 28° F (Table 1.1)

Table 1.1: Monthly Climate Summary

MANHATTAN, MONTANA (245351)													
Period of Record Monthly Climate Summary													
Period of Record : 4/15/1895 to 6/30/1983													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	31.4	35.9	43.7	57.8	68.4	75.6	81.9	81.5	68.1	57.4	41.5	32.5	56.3
Average Min. Temperature (F)	9.3	11.5	19.5	29.7	38.3	44.5	47.9	44.6	36.3	27.0	17.4	10.6	28.0
Average Total Precipitation (in.)	0.50	0.42	0.70	0.98	2.05	2.11	0.99	0.86	1.17	0.79	0.58	0.42	11.56
Average Total SnowFall (in.)	8.1	5.5	7.9	4.5	0.9	0.0	0.0	0.0	0.2	1.3	4.7	5.8	38.9
Average Snow Depth (in.)	3	2	1	0	0	0	0	0	0	0	0	1	1

Composting Area Design and Construction

The design features and layout of the proposed composting area is shown in Figure 1.3. The composting area will be divided into four separate areas for compost production and curing: a 1.68-acre public compost drop-off area, a 2.24-acre general compost area, a 3.08-acre biosolids compost area, and a 2.11-acre compost curing area. An 8-inch thick compacted soil pad that is overlain by a 6-inch thick layer of gravel will be constructed in each area. The composting pads will be sloped at a 2% grade from the west towards the east to the storm water diversion ditch on the eastern side of the compost expansion area. The storm water diversion ditch will convey storm water to one of two storm water detention ponds.

Groundwater Monitoring

The groundwater monitoring program for the proposed expansion area will be incorporated into the DEQ approved groundwater monitoring program for the active Logan Class II Landfill facility. The location of the existing monitoring well network is shown on Figure 1.4. Monitoring well

LMW-15, located northwest of the proposed public drop-off area, will be incorporated into the existing groundwater monitoring network. Groundwater monitoring will continue to be conducted twice per year. This semi-annual groundwater monitoring will continue to be performed during the active life of the Logan Class II Landfill facility as well as during the 30-year post-closure care period.

Landfill Operations

The facility will continue to operate as a public Class II SWMS. Facility operations will continue to follow a DEQ approved Operations and Maintenance (O&M) Plan that describes the necessary procedures for all solid waste management activities. The facility O&M Plan will be updated, as necessary, as on-site conditions change.

Personnel — Composting has been a part of the approved operations conducted at the Logan Class II landfill, and the landfill staff will continue to operate the composting area after it has been moved into the expansion area. Additional personnel will be added as needed.

Operating Hours — The District does not anticipate any changes to the current operating hours as a result of the proposed expansion. The Logan landfill will remain open from 7:30 a.m. to 4:30 p.m., Monday through Saturday; the landfill will continue to be closed on Sundays, and on holidays including Christmas, New Years, Memorial Day, July 4th, Labor Day, and Thanksgiving.

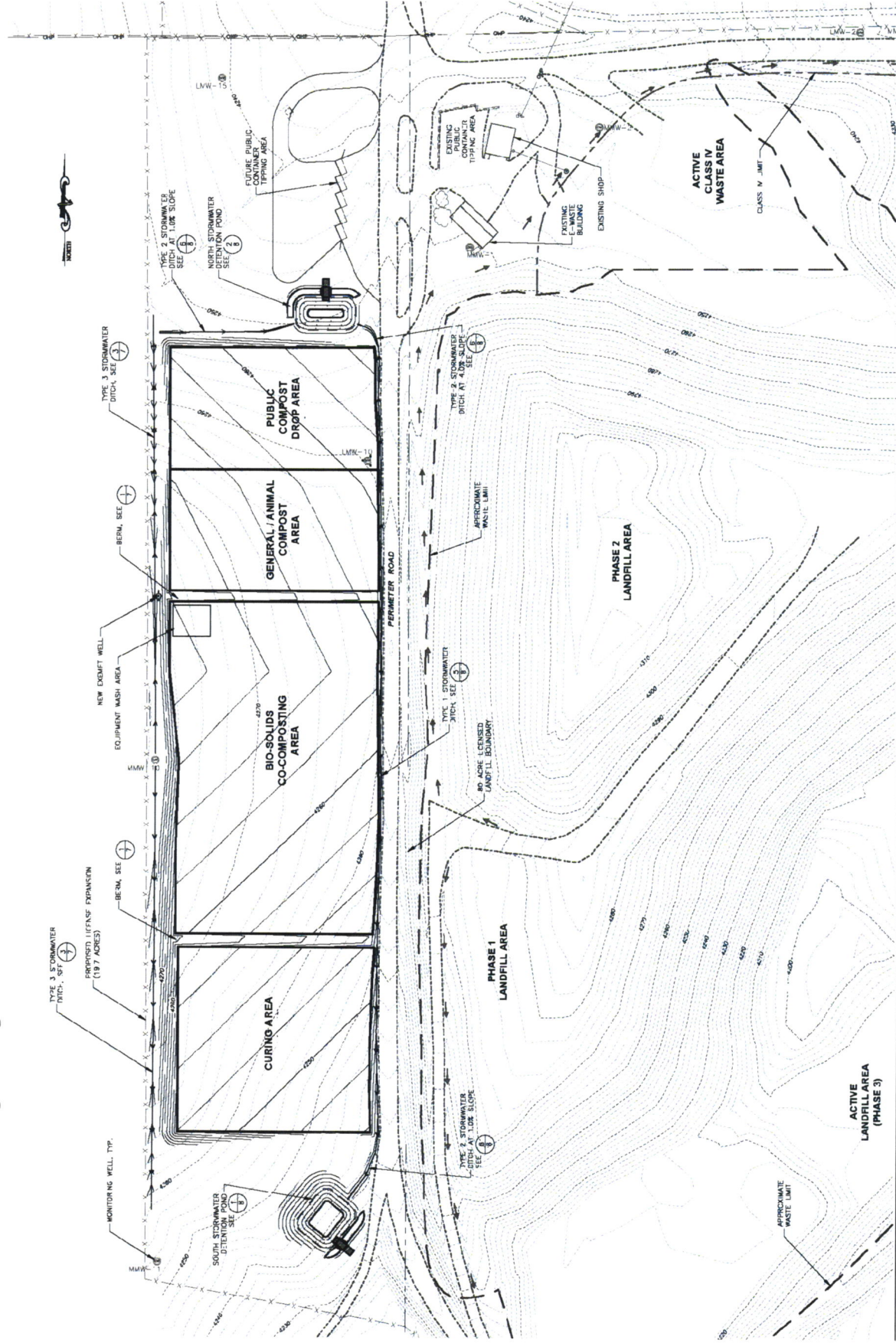
Access Control — The landfill security fences will be extended around the expansion area to limit landfill access by unauthorized persons. All landfill users will continue to enter the site through the main facility gate. Scale house personnel will continue to control all access through this existing entrance.

Acceptable Wastes — In addition to the materials accepted for disposal at the current landfill, the facility will continue to accept the following organic materials for composting:

- Dewatered sewage sludge;
- Waste-activated sludge;
- Farm wastes (e.g. cow manure, waste hay, and straw);
- Wood wastes (wood chips, sawdust, ground brush);
- Food waste (source separated vegetable waste from restaurants, cafeterias, dining halls, and groceries);
- Paper shreds (documents shredded for security purposes);
- Dead animals (road-killed wildlife and livestock mortalities); and
- Locally-generated yard wastes and other organic wastes (e.g. grass, leaves, and tree trimmings).

Daily Operations — Landfill personnel will continue to direct vehicles to the appropriate waste unloading areas and maintain control over these areas used for depositing wastes at the facility. All vehicles entering the facility, whether for the purpose of disposing wastes or depositing materials for composting, will stop at the scale to weigh-in and weigh-out. The composting operation proposed for the expansion area west of the current licensed boundary is currently part of the approved facility operations being conducted in the interior of the licensed landfill facility. Movement of these operations into the proposed west-side expansion area will provide a permanent, more manageable area to conduct composting activities away from the active facility disposal operations.

Figure 1.3: Landfill Expansion Site Plan
Source: Great West Engineering



Source: Great West Engineering



The yard waste, wood chips, and animal carcasses received for composting at the landfill will be placed in the separate, designated composting areas. Paper shreds may be used in the composting process, but are received infrequently at the facility. When paper shreds are received for composting, they will be incorporated into the composting process as soon as they are received. Animal carcasses will also be placed for composting as soon as they are received by the facility.

All compost piles will be constructed on top of a bed of coarse wood waste. The size of each compost pile will be based on the specific characteristics of the materials being composted. The facility will monitor pile temperatures and odors daily to ensure that sufficient temperatures (130°F to 140°F) are attained and maintained for the first four to six weeks. When pile temperatures drop below 110°F, the piles will be turned with a windrow turner; the temperature of the pile typically increases to the 130°F range after turning. When necessary, finished compost will be used to cover the compost piles and will act as a biofilter to control odors. The process of monitoring and turning will continue until the temperature of the pile no longer increases after being turned. The finished compost will then be stockpiled, cured, screened, and utilized on-site for facility operations and maintenance.

Severe Weather Operations — The landfill will continue to cease operations during periods of high winds, excessive rain or snow, flooding, or fires. The cessation of facility operations, including the off-loading of compostable materials from public and private vehicles, during these severe weather events reduces the likelihood of injury to the public and the employees of the facility.

Storm Water Control —The facility will continue to follow the necessary erosion, drainage control, and sediment Best Management Practices (BMP's) to control storm water runoff and runoff in the expansion area. The proposed composting area expansion includes general site grading and soil compaction of each composting pad, as well as the construction of storm water diversion ditches and detention ponds. The detention ponds, located to the north and south of the proposed composting area along the eastern expansion boundary, are designed to retain the storm water from the expansion area (Figure 1.5). Ditches on the east side of the proposed composting area will divert the storm water that falls in the composting area towards one of these two detention ponds. The storm water ponds are designed to retain the storm water collected from a 100-year/24-hour storm event. The northern detention pond is designed to collect and retain 135,700 gallons of runoff and sediments; the southern detention pond is designed to retain 165,000 gallons of runoff and sediments.

The ponds will function to contain a surge of storm water generated from an intense rainfall or snowmelt event and retain the suspended sediments that would otherwise be contained in storm water runoff. The ponds are designed with overflow spillways (Figure 1.6) that will control any necessary release of the collected water to minimize the downstream impact of storm-induced flooding. Any necessary discharge from the storm water detention pond is covered by the facility's current General Industrial Storm Water Discharge Permit issued by DEQ's Water Protection Bureau. If a discharge occurs, the discharge permit requires that the storm water be sampled for total suspended solids and iron to ensure that the waters released are not depositing sediment downstream. The storm water from the detention ponds may also be used, as necessary, to add moisture to the compost piles.

Figure 1.5: Proposed Expansion Area Storm Water Detention Ponds Location (outlined in red)
Source: Great West Engineering

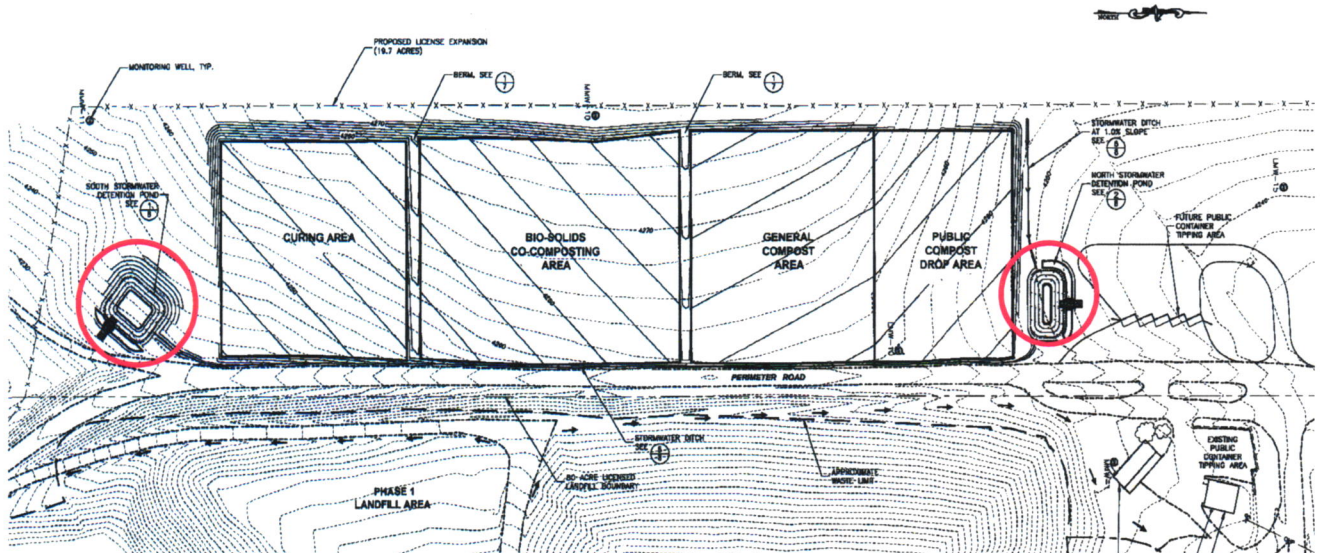
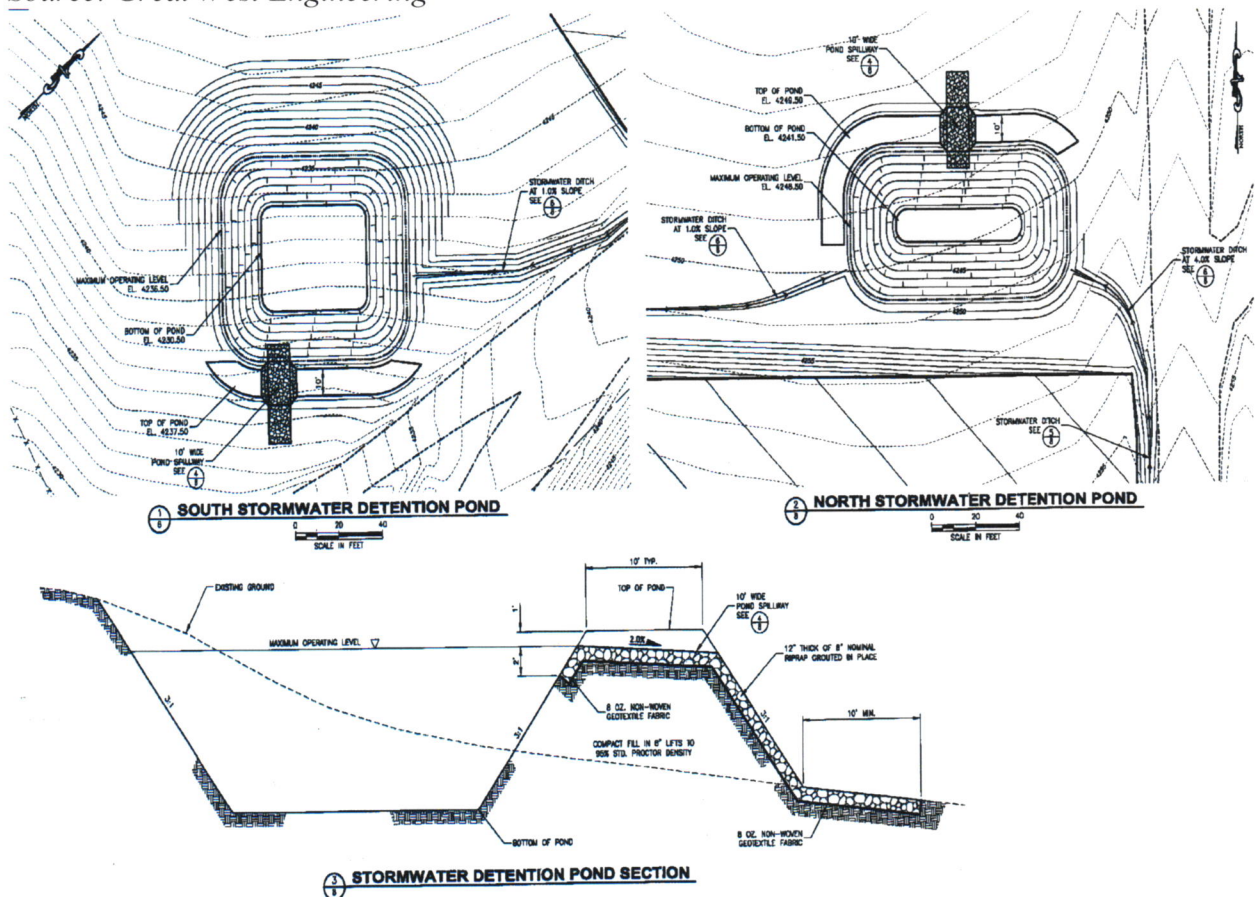


Figure 1.6: Proposed Expansion Area – Storm Water Detention Ponds Design Details
Source: Great West Engineering



SECTION 2.0 – ALTERNATIVES CONSIDERED:

The following provides a description of reasonable alternatives whenever alternatives are reasonably available and prudent to consider:

A decision by DEQ is triggered when the applicant upholds the request for licensure of the proposed activity at the proposed location. The applicants however, may at any time choose to withdraw the application. This would result in DEQ selecting the “no action” alternative, because a DEQ decision would not be necessary. If the applicant withdraws the application, the applicant could seek to locate a similar facility elsewhere.

Alternative A: The “no action” alternative. This alternative will be implemented when a final decision by DEQ is not required because the applicant has chosen to withdraw the application for expansion of the landfill.

Alternative B: The “license application denied” alternative. This alternative will be implemented if DEQ denies the application for the landfill expansion because it failed to meet the minimum requirements of the Solid Waste Management Act and could not continue to be processed as submitted. If denied, the applicant has the option to locate, investigate, and apply for licensure of another site.

Alternative C: The “license application approved” alternative. This alternative will be implemented if DEQ approves the application and issues a new license authorizing the District to expand the Logan Landfill as proposed.

In consideration of these alternatives, DEQ has not received a request by the applicant to withdraw the application for licensure of the proposed expansion area. In addition, DEQ has determined the landfill expansion application meets the requirements of the Solid Waste Management Act. Therefore, the potential environmental effects of Alternative C were evaluated for the proposed project based on the information provided and DEQ research on the area surrounding the proposed site. The results of DEQ’s evaluation of potential environmental impacts related to the proposed facility are summarized in Section 3.0.

SECTION 3.0: EVALUATION OF POTENTIAL EFFECTS

Tables 3.1 and 3.4 of this section identify and evaluate the potential effects that may occur to human health and the environment if the proposed Logan Landfill expansion application is approved. The discussion of the potential impacts only includes those resources potentially affected. If there is no effect on a resource, it may not be mentioned in the analysis.

Direct and indirect impacts are those that occur in or near the proposed project area and may extend over time. Often, the distinction between direct and indirect effects is difficult to define and for the purposes of this discussion, direct and indirect impacts are combined.

Table 3.1 – Impacts To The Physical Environment

PHYSICAL ENVIRONMENT	Major	Moderate	Minor	None	Unknown	Attached
1.0 Terrestrial and Aquatic Life and Habitats			✓			✓
2.0 Water Quality, Quantity, and Distribution			✓			✓
3.0 Geology				✓		✓
4.0 Soil Quality, Stability, and Moisture			✓			✓
5.0 Vegetation Cover, Quantity, and Quality			✓			✓
6.0 Aesthetics				✓		
7.0 Air Quality				✓		✓
8.0 Unique, Endangered, Fragile, or Limited Environmental Resources				✓		
9.0 Historical and Archaeological Sites				✓		
10.0 Demands on Environmental Resources on Land, Water, Air or Energy				✓		

ANALYSIS OF TABLE 3.1 – POTENTIAL IMPACTS TO THE PHYSICAL ENVIRONMENT

This section evaluates the potential environmental effects that may occur on the physical environment if the proposed Logan Landfill expansion is approved. The number on each of the underlined resource headings corresponds to a resource listed in Table 3.1. Generally, only those resources potentially affected by the proposal are discussed. Therefore, if there is no effect on a resource, it may not be discussed.

1.0 Terrestrial and Aquatic Life and Habitats

The Logan Landfill facility is located in a broad, semiarid, largely treeless basin that lies east of the Continental Divide and contains floodplains, stream terraces, alluvial fans, and hills. The native vegetation is a mixture of prairie grasslands and montane forests species. The common natural grasses consist of fescue, wheatgrass, junegrass, and needle and thread. Native trees and shrubs that occupy the area include limber and ponderosa pine, Douglas-fir, sagewort, sagebrush, and sumac. Land use is comprised of cropland, rangeland, and urban-suburban-industrial development.

There are no wetlands or permanent water surfaces occupying the expansion areas. Because no active aquatic systems currently exist within the expanded facility boundaries, it is unlikely that there will be any significant aquatic life or habitat anywhere on the site. Therefore, the impact to aquatic species is negligible. Once the expansion area has been established, lacustrine habitats may be present as a result of the storm water detention ponds. It is unlikely that aquatic species will naturally populate the storm water detention ponds. However, avian species may occupy the pond temporarily. The storm water detention ponds are designed primarily as evaporation ponds, so any avian species relying on this water supply will relocate once the pond dries up.

Transient populations of grazing large game animals in the area include antelope, mule deer, whitetail deer, and elk. Wandering predators like the coyote and fox may occasionally inhabit surrounding drainages. Permanent residence by burrowing small mammals is unlikely on developed or farmed areas. Sporadic and temporary residence by various avian species including waterfowl, ravens, crows, and opportunist raptors like eagles, merlins, falcons, and burrowing owls are more likely.

The primary impact to terrestrial and avian species anticipated due to construction of the proposed expansion area will be the displacement of any species that may currently inhabit the site. However, the impacts will be minor due to the abundance of surrounding similar habitat. The displacement of any wildlife habitat due to the construction and operation of the expansion area will not be considered critical because it is not a unique or rare wildlife environment. The facility's compliance with good operational practices, including the application of finished compost over active static piles, will eliminate the attractiveness of compost feed stocks to scavenging animals, birds, and insects. Once the facility closes, the area will be re-seeded to native plant species resembling the surrounding area. Terrestrial and avian species may then reinhabit the area once the facility closes.

2.0 Water Quality, Quantity, and Distribution

Surface Water

Surface water runoff, also known as storm water runoff, is the flow of water that occurs when the excess water generated by rainfall, snowfall, or the melting of snow flows over the land surface. This flow will occur when the soil is saturated or frozen, when precipitation falls more quickly than the soil can absorb, or when a combination of both of these conditions exists. Storm water runoff can cause erosion and may transport sediments some distance from the source depending upon the intensity of the runoff, vegetative cover, soil characteristics, and topography.

The proposed landfill expansion area design includes general site grading and the construction of storm water diversion ditches, berms, and storm water detention ponds. Ditches on the west side of the proposed expansion area will divert the storm water that falls outside the proposed compost areas towards natural discharge areas. The proposed expansion is located approximately three quarters of a mile south of the Gallatin River, the main drainage mapped on the United States Geological Survey (USGS) Logan MT 1:24,000 quadrangles. Generally, surface water drains from the surrounding mountains via the East Gallatin and West Gallatin Rivers located to the southwest. Numerous irrigation ditches transport surface water from these rivers and from other smaller un-named streams to agricultural land throughout the valley.

Storm water detained at the proposed Logan expansion is not expected to overflow the storm water detention ponds, enter the local drainages at the northern margin of the facility, and then flow northward to impact the Gallatin River that is located 0.75 miles north of the landfill. Any such excessive flow would exceed the 100-yr/24-hr storm water pond capacity, and would be extremely diluted by other flows from the adjoining branches of the coulees before reaching the Gallatin River. Thus, any impacts to existing nearby aquatic life and habitat due to the proposed facility will likely be very minor. Due to the proposed storm water controls and the low precipitation the area receives, the impacts to surface water from the construction and operation of the facility are expected to be minor. The controlled release of storm water from the storm water detention ponds will not contain the suspended sediment load that likely occurs during heavy precipitation or snowmelt events. Thus, the quality of the water released from a controlled event, if necessary, is expected to be better than what would be released otherwise. If a release from the storm water detention ponds is ever necessary, the facility's current storm water discharge permit requires the storm water be analyzed for total suspended solids and total iron to ensure that the waters released are not depositing sediments downstream.

Groundwater

The Gallatin Valley extends over roughly 520 square miles of southwestern Montana. The valley is bounded by the Horseshoe Hills to the north, the Gallatin and Madison ranges to the south, the Bridger range to the east, and the Western Three Forks Valley to the west (Kendy and Tresch, 1996). The valley is drained by the Gallatin River and its tributaries. Quaternary flood-plain alluvium generally is the most permeable material in the basin, and the most reliable source of ground water. Transmissivity values range from 5,100 to 90,000 ft²/day, and average 27,000 ft²/day for the alluvium of the Gallatin River. Quaternary and Tertiary alluvial-fan deposits have a wide range of hydraulic characteristics, indicating that they can provide sufficient supplies for many water uses including domestic, livestock, and irrigation. Basin-fill aquifers are unconfined throughout the Gallatin Valley. Bedrock is not an important aquifer in the basin.

Nearby Groundwater Supply Wells

The Montana Bureau of Mines and Geology, Groundwater Information Center (GWIC) database identified 13 wells located within one-mile of the site, 11 of which are wells in the Logan Landfill groundwater monitoring network (Figure 3.1). Because the GWIC database locates wells by section, all wells in the sections containing the proposed expansion area were included in this analysis Table 3.2 summarizes the well information by section. The data used to create this table are collected from well drillers' records and are not verified for accuracy. The wells identified by GWIC nearest to the proposed expansion site are greater than 60 feet deep and have static water levels greater than 35 feet below ground surface. The proposed compost expansion area will be constructed with a sloped and compacted working surface to ensure that storm water is quickly diverted from the composting area and directed to one of two storm water detention ponds. As a result, there is no anticipated impact to groundwater or groundwater supply wells in the area.

Figure 3.1: Location of GWIC-identified Wells within 1.5 miles of the Logan Class II Landfill (Current license boundary outlined in red; well locations are blue dots; springs are red dots)

Source: Montana Bureau of Mines and Geology



Table 3.2: Summary of wells in a mile radius

Source: Montana Bureau of Mines and Geology Ground Water Information Center (GWIC)

GWIC Id	Township	Range	Section	Quarter Section	Type	Total Depth	Static Water Level	Yield (gpm)	Date	Use
254350	01N	02E	1		WELL	177.8			11/7/1990	MONITORING
276398	01N	02E	1	AAA	WELL	123	85	11	12/16/2013	MONITORING
259080	01N	02E	1	AAAD	WELL	130	101	18	11/1/2010	MONITORING
269452	01N	02E	1	AABB	WELL	88				MONITORING
170094	01N	02E	1	BDAA	WELL	145	106	20	11/17/1998	STOCKWATER
9289	01N	02E	1	D	WELL	80	15	25	5/31/1985	STOCK
121729	02N	03E	31	BA	WELL	117.3	60	65	8/31/1990	MONITORING
259079	02N	03E	31	CCC	WELL	91	67	7	10/28/2010	MONITORING
259078	02N	03E	31	CCD	WELL	84	55	42	10/29/2010	MONITORING
259077	02N	03E	31	CCD	WELL	82	49	25	11/3/2010	MONITORING
254239	02N	03E	31	CCDC	WELL	75	47		12/20/1994	MONITORING
259038	02N	03E	31	CDC	WELL	62	36.6	5	11/2/2010	MONITORING
254240	02N	03E	31	CDCC	WELL	59	47		12/20/1994	MONITORING
Spring not identified in GWIC	02N	03E	31		Spring					DOMESTIC
Spring not identified in GWIC	02N	03E	31		Spring					DOMESTIC

3.0 Geology

The Logan landfill and proposed expansion sites are located in northwestern Gallatin County, in the north-central portion of the Gallatin Valley, just south of the Gallatin River. The Gallatin Valley occupies the eastern half of the Three Forks basin, which is a broad basin within the Rocky Mountains. The general topography of the area is characterized by mountains, which surround the valley to the north, east, and south. The Madison Plateau forms the western boundary of the Gallatin Valley, separating it from the western half of the Three Forks Basin. The Madison Plateau is a broad, low relief topographic feature that separates the Gallatin River Drainage basin from the Madison River drainage basin.

The majority of the Gallatin Valley basin is filled with sedimentary rock overlain by alluvium. Alluvium is loose, unconsolidated sediments that have been eroded and re-deposited by rivers and streams. The Montana Bureau of Mines and Geology map indicates that the area is underlain by upper-Tertiary age sediments. Near Bozeman Hot Springs, the alluvial cover is estimated to be approximately 70 feet thick (Kendy and Tresch, 1996). The mountains surrounding the basin are composed of metamorphic, sedimentary and igneous bedrock. This bedrock is generally less permeable than the unconsolidated alluvium. There is no anticipated impact to the geology at the site from the construction and operation of the composting area.

4.0 Soil Quality – Stability & Moisture

The soil types at the proposed land application site are classified as the Kalsted sandy loam, Chinook fine sandy loam, Chinook-Kalsted loams, and Glendive sandy loam (Figure 3.2). The majority of the expansion site consists of the Kalsted sandy loam, 0 to 4% slopes, and Kalsted sandy loam, 4 to 8% slopes. The Kalsted soils are somewhat excessively drained with a high available water capacity of about 7.2 inches and moderately high to high permeability. Chinook-Kalsted sandy loams, 8 to 15 percent slopes, consists of sandy loam and fine sandy loam, and are well drained with a moderate available water capacity of about 8.4 inches and high permeability. All of the soils in the area have a depth to the water table of over 85 feet.

The nineteen test pits excavated in the western expansion area parcel identified soils that are generally classified as sandy loams. Soil cores were collected from three of the test pits. One 24-inch soil core was collected from each of the three soil borings. These core samples were submitted for laboratory testing to measure the grain size percentages and verify the material description. Laboratory test results confirmed that the site soils consist of silty-sand and poorly graded sand with silt. The foundation soils at the site are suitable for the activities proposed in the proposed expansion area. The anticipated impact to soil quality at the site will be minor. An 8-inch thick compacted soil pad overlain by a 6-inch thick layer of gravel will be constructed in each composting area. In addition, surface soils will be removed to construct the storm water detention ponds in the compost expansion area.

Figure 3.2: Map of Soil Types (Current landfill site is outlined in red)

Source: USDA-NRCS, Web Soil Survey, Gallatin County, Montana

Soil Key

35B: Kalsted sandy loam , 0 to 4 percent slopes

35C: Kalsted sandy loam, 4 to 8 percent slopes

438D: Chinook Kalsted sandy loam, 4 to 8 percent slopes

5.0 Vegetation Cover, Quantity, and Quality

The vegetation community in and around the proposed Logan Landfill expansion area is classified as foothill grasslands. The foothill grassland community consists of several species of grasses, namely fescue, wheatgrass, junegrass, and needle and thread. Scattered shrubs and low trees, sagebrush and ponderosa pine, may populate the intermountain vegetation. Because ground cover is generally sparse, large areas of soil are often exposed.

A search by the Montana Natural Heritage Program found that there are no records of plant species of concern in the area surrounding the site. The vegetation and topsoil will be removed during construction of the 9.11-acre compost pad and the two storm water ponds and ditches. The topsoil removed during the expansion development will be used in the current licensed landfill for daily, intermediate, and final soil cover.

Revegetation of the disturbed areas in the proposed expansion upon closure will return the site to grass land suitable for wildlife habitat and livestock grazing. In order to assure the integrity of the revegetation process, grazing will initially be restricted to allow the cover vegetation to become fully established. The owner will monitor grazing activities to prevent overgrazing.

The overall impact of the expansion area construction, operation, and closure activities on the original vegetation will be minor, being largely isolated to the compacted pad that will be constructed for the composting activities. The final topsoil will be partly derived from the stockpiles of compost produced on-site. However, the disturbed areas will be re-seeded with native plant species appropriate to the area as recommended by the Natural Resource Conservation Service at the time of closure.

Table 3.4 – Impacts To The Human Environment

HUMAN ENVIRONMENT	Major	Moderate	Minor	None	Unknown	Attached
1.0 Social Structures and Mores				✓		
2.0 Cultural Uniqueness and Diversity				✓		✓
3.0 Density & Distribution Of Population and Housing				✓		
4.0 Human Health and Safety				✓		
5.0 Community and Personal Income				✓		
6.0 Quantity and Distribution Of Employment				✓		
7.0 Local and State Tax Base Revenues				✓		
8.0 Demand For Government Services			✓			✓
9.0 Industrial, Commercial, and Agricultural Activities and Production			✓			✓
10.0 Access To and Quality Of Recreational and Wilderness Activities				✓		
11.0 Locally Adopted Environmental Plans and Goals				✓		
12.0 Transportation			✓			✓

ANALYSIS OF TABLE 3.4 - POTENTIAL IMPACTS ON HUMAN ENVIRONMENT

This section evaluates the potential environmental effects that may occur on the human environment if the proposed facility is approved. The number on each of the underlined resource headings corresponds to a resource listed in the tables. Generally, only those resources potentially affected by the proposal are discussed. Therefore, if there is no effect on a resource, it may not be discussed.

2.0 Cultural Uniqueness and Diversity

A cultural resource file search was conducted for Section 31, T2N, R3E, and Section 1, T1N, R2E. The results of the file search indicated there have been a few previously recorded sites within this designated area. Based upon previous ground disturbances in the area associated with agricultural activities, the State Historic Preservation Office (SHPO) determined that there is a low likelihood cultural properties will be impacted and therefore a cultural resource inventory is unwarranted. However, if cultural materials are inadvertently discovered during proposed expansion of the site, the SHPO requested that they be contacted and that the site be investigated for additional cultural resources.

8.0 Demand for Government Services

The Gallatin County Environmental Health Department and DEQ's Solid Waste Section will continue to perform site inspections and provide any necessary compliance assistance; currently a routine activity. There is no additional impact anticipated as a result of licensure of the proposed expansion.

9.0 Industrial, Commercial, and Agricultural Activities and Production

Land use is comprised of cropland, rangeland, and urban-suburban-industrial development. Agriculture is found on the undissected gravel benches and in the alluvial soils of the area river valleys. Spring wheat, oats, hay, and barley are common crops. Since the area immediately surrounding the proposed expansion site is sparsely developed agricultural and pasture land, no additional industrial or commercial impacts are anticipated from licensure of the proposed expansion. The relatively small area of land occupied by the proposed expansion would have almost no effect on the availability of the agricultural resources in the area.

12.0 Transportation

The Logan Landfill will continue to be accessed from Two Dog Road that runs adjacent to US Interstate-90. Two Dog Road is currently utilized by local area landowners, farmers, and ranchers, as well as landfill customers.

The Logan Landfill currently conducts composting operations within the current licensed boundary. Movement of the composting activities from the interior of the landfill to the expansion area may result in additional traffic from public customers interested in composting materials they generate but may have disposed of in the past. As a result, there may be a minor increase in traffic from private vehicles to the landfill as a result of the movement of the composting operations into the expansion area. However, the anticipated impact to the road surface is minor.

SECTION 4.0 CONCLUSIONS AND RECOMMENDATIONS

A listing and appropriate evaluation of mitigation, stipulations and other controls enforceable by the agency or another government agency:

The proposed licensure of the Gallatin Solid Waste Management District's Logan Landfill expansion will meet the minimum requirements of the Montana Solid Waste Management Act and administrative rules regulating solid waste management. Adherence to these regulations and the approved facility Operation and Maintenance Plan will mitigate the potential for harmful releases and impacts to human health and the environment.

Recommendation:

DEQ's recommendation is to distribute the Draft EA to adjacent landowners and interested persons for 30-days to satisfy the public notification and participation requirements of MEPA. Substantive comments received during the 30-day public participation period in response to the Draft EA will be considered in the final decision on the proposed action.

Findings:

DEQ has determined that the proposed site, located adjacent to the existing landfill on rural property, will have a minor impact on the surroundings. The site will be fenced, access will be controlled at all times, and all activities will be performed according to the DEQ approved Operation and Maintenance Plan. Site activities will be verified by periodic inspections performed by DEQ and/or Gallatin County personnel to ensure the facility that the potential risk of adverse effects on human health and the environment resulting from operation of the facility are minimized. DEQ's approved Operation and Maintenance Plan includes conditions and limitations to ensure facility operations will continue to be conducted in compliance with all applicable rules and regulations. DEQ will review all comments received during the public comment period and will consider all substantive comments received in response to the Draft EA prior to publication of the final EA and licensure of the expansion area.

Other groups or agencies contacted or which may have overlapping jurisdiction:

Montana Natural Heritage Program
State of Montana Historic Preservation Office
U.S. Geological Survey
Montana Bureau of Mines and Geology
U.S. Department of Agriculture - Natural Resource Conservation Service

Individuals or groups contributing to this EA:

Montana Natural Heritage Program
State of Montana Historic Preservation Office
Great West Engineering
U.S. Geological Survey
Montana Bureau of Mines and Geology
U.S. Department of Agriculture - Natural Resource Conservation Service

EA prepared by: Fred Collins, John Collins, and Mary Louise Hendrickson – Montana DEQ, Solid Waste Section

Date: July 13, 2015

REFERENCES:

- Alt, David and Hyndman, Donald W., 1986, *Roadside Geology of Montana*: Mountain Press Publishing Company, Missoula MT.
- Alt, David and Hyndman, Donald W., 1995, *Northwest Exposures*: Mountain Press Publishing Company, Missoula MT.
- Downey, Joe S., 1986, *Geohydrology of bedrock aquifers in the northern Great Plains, in parts of Montana, North Dakota, South Dakota, and Wyoming - Regional aquifer system analysis*: U.S. Geological Survey Professional Paper 1402-E, 87 p.
- Great West Engineering, April 2014, Gallitan County Landfill Class II License Expansion.
- Kendy, Eloise, and R.E. Tresch, 1996, *Geographic, geologic, and hydrologic summaries of intermontane basins of the northern Rocky Mountains, Montana*, Water-Resources Investigations Report 96-4025
- Montana Tech of the University of Montana, 2014, Montana Bureau of Mines and Geology, Groundwater Information Center, <http://mbmggwic.mtech.edu/>
- Montana Natural Resources Information System (NRIS), 2005, *Montana Natural Heritage Program*, website <http://nhp.nris.state.mt.us/>
- Noble, R.N., et al., 1982, *Occurrence and characteristics of ground water in Montana*: Montana Bureau of Mines and Geology Open File Report 99, 214 p.
- State of Montana, 2005, *Montana's Comprehensive Fish and Wildlife Conservation Strategy*: Department of Fish, Wildlife, and Parks.
- U.S. Census Bureau, Montana Quick Facts <http://quickfacts.census.gov/qfd/states/30/30085.html>
- United States Department of Agriculture, Natural Resources Conservation Service, Web Soil Survey, <http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>
- Western Regional Climate Center, Desert Research Institute, Reno, Nevada, website <http://www.wrcc.dri.edu/CLIMATEDATA.html>
- Woods, Alan J., Omernik, James M., Nesser, John A., Sheldon, J., Comstock, J.A., Azevedo, Sandra H., 2002 *Ecoregions of Montana*, 2nd edition. 1:1,500,000.